

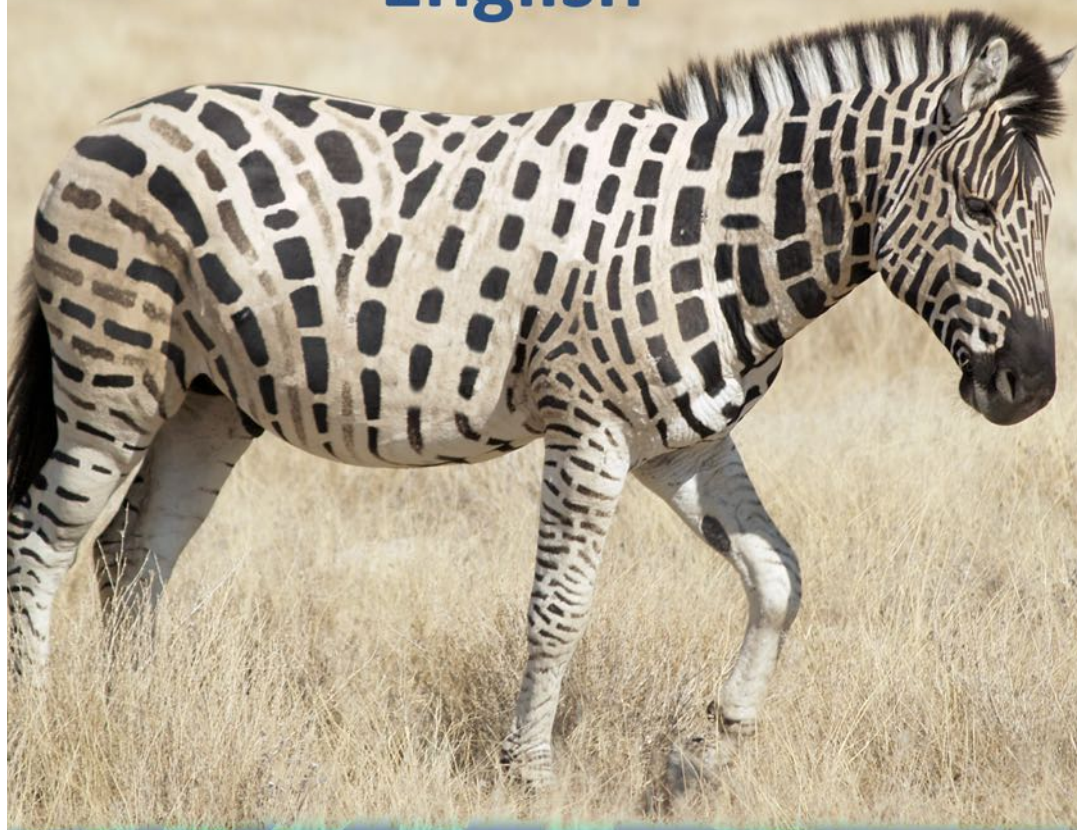


**K U LEUVEN**

**iGEM 2015**

# **Sponsor Brochure**

## **English**



**BioSCENter.eu**  
Science, engineering & technology

## Sponsors



## Contact Data

### KU Leuven Website:

<http://www.kuleuven.be/bioscenter/igem>

### iGEM Wiki:

[2015.igem.org/Team:KU\\_Leuven](http://2015.igem.org/Team:KU_Leuven)

### Social Media:

Facebook: [www.facebook.com/KULeuveniGEM](http://www.facebook.com/KULeuveniGEM)

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## 1. Introduction

**KU Leuven goes iGEM again!** iGEM (*International Genetically Engineered Machine*) is the most prestigious competition in synthetic biology over the globe. Interdisciplinary undergraduate student teams from all over the world compete during the summertime in order to develop the most innovative micro-organisms. Those teams gather then **in Boston**, USA (a.o. at the MIT), where they present their projects and compete for prizes and medals, which are highly regarded rewards in the field of synthetic biology.

After four successful editions, rewarded each time with a gold medal and in 2013 with the best model prize, the KU Leuven is participating again in the iGEM competition hoping to once more beat the odds.

This year, we try to better understand the fundamental mechanisms standing behind **all kinds of biological patterns**. Success in this research will reveal one of the first cornerstones of a whole world that is still hiding a lot of secrets to mankind. Finally, these mechanisms could be used in a wide variety of applications.

The mind-set of the iGEM community is not just about developing new biological systems – it is also about introducing students into the wide world of synthetic biology. Each team should contribute to the goal of making the general public more aware of the novel possibilities and limitations of synthetic biology. Our project is thus more comprehensive than pure laboratory work and molecular modeling. We will visit schools to spark interest



in scientific research and promote synthetic biology to the younger generation: the scientists of tomorrow. We plan to organize a symposium inviting other iGEM participants from the Benelux and surrounding countries. We are also building a solid business plan to advertise, popularize, and ‘smart-develop’ our ideas. The entrepreneurship and innovation must come together to help us succeed.

To win a prize at the iGEM competition, a team must possess the right human and financial resources. Each team member was carefully chosen through a hard selection procedure during which the **13 students** were selected. Each of them shows a never-ending enthusiasm, passion for synthetic biology, talent, knowledge, and most of all a huge amount of persistence. The people and atmosphere between them ensure the right “drive” to a very good and innovative outcome. Our project is executed under the guidance of the Laboratory of Molecular and Synthetic Biology.

Beside this, we also need financial and material resources for our experiments, public events, journey to Boston... Without help, creating the optimal environment for the team is almost impossible. That is why we really need your help in winning a gold medal (and more!) and maintaining KU Leuven’s high reputation. Given the fact that the iGEM competition is the largest and most prestigious of its kind, we will compensate our sponsors with both **national and international publicity**. This is the unique opportunity to increase your visibility!



## 2. What is iGEM?



iGEM stands for the 'International Genetically Engineered Machine' and was the first synthetic biology competition in the world. The competition was founded at the 'Massachusetts Institute of Technology' (MIT) in 2003 as a course for students and has evolved into the most prestigious international synthetic biology competition. This year, more than 280 university teams have enrolled from all over the world!

The goal of the competition is to let students develop new biological systems using available BioBricks or BioBricks designed by the team. The competition also intends to increase public awareness for synthetic biology by trying to break prejudices about biotechnology.

Each team chooses a subject suiting their interests, therefore a great variety of topics can be expected. The students work on their projects over the summer and present them afterwards at the Giant Jamboree in Boston on 24-28 September, 2015.

For more information about the iGEM competition, see [www.igem.org](http://www.igem.org).

### 3. What is synthetic biology?

Synthetic biology is a relatively recent scientific area, where new biological functions and systems are created. This is achieved with BioBricks – standardized DNA sequences, comparable to the Lego® blocks, but on the molecular level. Existing sequences of DNA are used as building blocks and recombined to form new systems. The comparison to electric circuits may also apply. Bacteria become a kind of ‘mini-computers’ that can be programmed using externally added genetic information to exhibit a new property. Hence, synthetic biology can be seen as an extended form of biotechnology.



BioBricks connected to form a vanillin receptor

Source: [www.partsregistry.org](http://www.partsregistry.org)

The applications of synthetic biology are very diverse and can range from the production of vaccines, chemicals or bio-fuels to the creation of biosensors and much more! For example, the KU Leuven, in cooperation with IMEC, has developed a microchip that is connected to a biosensor composed of bacteria. This microchip can detect environmental components and generate an electric signal as a response.

In comparison to other European countries, Belgium currently plays a limited role in the field of synthetic biology. On top of that, there are barely any debates concerning the importance of synthetic biology for our society or the possible consequences for environment, biodiversity, economy, healthcare, etc. By taking part in the iGEM competition, we hope to bring a change concerning synthetic biology in Belgium!

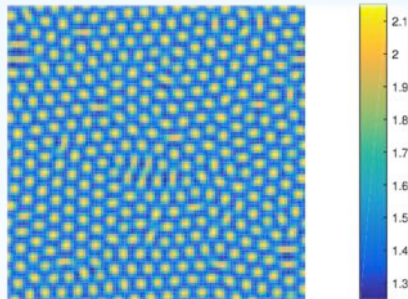


## 4. Our project



### Spot E.Shape

The KU Leuven team decided to work on the fundamental mechanisms that also influence our society, namely formation of patterns. Our mission is to create different complex and astonishing biological patterns that can be steered towards defined directions. Guiding the pattern will happen through the applied stimuli. These will impact the movement of the cells and the way they communicate with each other. The combined effect of both characteristics will cause the cells to group or disperse, depending on their location on the agar plate. Eventually, a beforehand modeled and calculated pattern will be generated.



A better understanding of this process in combination with the appropriate and detailed predictive mathematical models, will be advantageous in many different fields, ranging from construction and design, to medicine and even electronics. Tumor formation and tissue regeneration are two of the examples where the medical world could benefit from a deeper knowledge of pattern formation.



The generation of patterns in a controlled way will also allow the production of novel bio-based materials. After forming a 3D pattern, the cells can be engineered to precipitate or deposit networked bio-minerals, opening up exciting new avenues for the production of micro-structured bio-composite materials. In the long term, describing the desired patterns of specific bacteria could lead to applications in miniature electrical conductors and/or electronic circuits.

The most recent news about our project can be found on the Wiki page of our KU Leuven team.

[http://2015.igem.org/Team:KU\\_Leuven](http://2015.igem.org/Team:KU_Leuven)

## 5. Previous KU Leuven projects

### 2013



In 2013, the KU Leuven team chose to create an ecological insecticide-free aphid controlling mechanism embedded in their “*E. Coligy*: Plants with BanAphids” project. This mechanism is able to reduce the damage that aphids cause to the agricultural industry by mimicking the natural signaling systems used by plants and insects in an eco-friendly manner. The project was evaluated very positively by the iGEM community and awarded both the gold medal and the prize for the best model!



## 2011



Students of the KU Leuven iGEM 2011 chose to build a bacterium that can stimulate the formation of ice as well as defrosting, depending on the stimulus. The bacteria could be used to form an anti-freeze biofilm to cover roads, to prevent further melting of glaciers or to create ice at higher temperatures. With the *E.D. frosti*, the 2011 team brought home a gold medal.

## 2009

In 2009, the KU Leuven team participated with the project: *Essencia coli*, vanillin-producing bacteria. Using a light receptor, it was possible to stimulate vanillin production with blue light. There was also a built-in feedback mechanism to maintain a constant vanillin concentration. This is a universal system and can be applied to other odors or flavors. This project also received a gold medal.



## 2008



The KU Leuven team first took part in the iGEM competition in 2008 with the project *Dr. Coli*. The goal was to manipulate *E. Coli* bacteria so that they would produce the necessary antibiotics/medicines by themselves when needed in the human body. The KU Leuven team won a gold medal for the first time at the World Championship Jamboree with this project.

## 6. iGEM 2015 team

This year, our team consists of 13 students who are dedicating their summer to work on the iGEM project. The numerous late night meetings organized from the beginning of the year 2015 were the perfect opportunity to create an optimal atmosphere to discuss the possible iGEM project proposals and to boost the team spirit. The multidisciplinary team consists of students from five different faculties, nine different educational programs with different backgrounds, perspectives, nationalities... We are all bounded by our enthusiasm for science and research and each of us possesses the courage to face big challenges. Additionally, we will be supported by previous iGEM'mers and all levels' employees of the KU Leuven University. The previous KU Leuven teams have set high standards to benchmark ourselves against. We will do our best to carry on this trend in the 2015 iGEM competition!



Faculty of Bioscience  
Engineering



**Jasper Janssens**

*Cell and Gene Technology*

Function: *Coordination Wet Lab - Dry Lab, Literature and Modeling*



**Laetitia Van Wonterghem**

*Cell and Gene Technology*

Function: *Wet Lab, Graphics and Photos & Art*



**Leen Verschooten**

*Cell and Gene Technology*

Function: *Wiki, Communication & Social Media, Education and Modeling*

Faculty of Medicine



**Laura Van Hese**

*Biomedical Sciences*

Function: *Sponsors, Wet Lab, Literature, Graphics and Photos & Art*



**Eline Deprez**

*Chemical and Mechanical Engineering*

Function: *Ethics, Modeling, Literature and Sponsors*

Faculty of Engineering



**Thomas Pak**

*Nanoscience and Nanotechnology*

Function: *Logistics, Wiki and Modeling*



**Moritz Wolter**

*Mathematical Engineering*

Function: *Modeling, Wiki and Ethics*



**Frederik Jonnaert**

*Business Engineering*

Function: *Business Plan, Sponsors, Wiki and Logistics*



**Ines Cottignie**

*Biology*

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**Astrid Deryckere**

*Biochemistry and Biotechnology*

Function: *Education, Wet Lab, Literature and Ethics*



**Ovia Thirukkumaran**

*Biophysics and Biochemistry*

Function: *Inter-team Communication, Wet Lab, Communication & Social Media, Graphics and Photos & Art*



**Laurens Vandebroek**

*Biochemistry and Biotechnology*

Function: *Graphics, Photos & Art, Education and Wet Lab*



**Vincent Van Deuren**

*Biochemistry and Biotechnology*

Function: *Literature, Wet Lab and Business Plan*



## 7. Sponsoring

### How can you support us?

In order to create the perfect environment to work in, we strongly rely on financial support and material resources. This is where you, as a future sponsor, can really help us. To successfully accomplish our project, we need your support not only in finances but also in laboratory materials and consumables.

### Where does your support go to?

1. iGEM registration fees
2. Laboratory equipment and supplies
3. Flight tickets and accommodation in Boston

### What can we offer you?

We offer the unique opportunity to boost your publicity and visibility on a worldwide scale. The iGEM competition has an excellent reputation and is considered the biggest synthetic biology event in the world. That is why it receives lots of media exposure from all over the globe. This could be the chance to catch the attention of the current and future leaders of the synthetic biology community towards your company.

Our media attention will not be generated only at the Giant Jamboree in Boston, USA, but also throughout the whole summer in Belgium, Europe and worldwide. We are eager to find our project and our team in numerous scientific journals, on the radio and even on the news. Furthermore,

we are planning to visit schools where we will interact with and try to transfer our enthusiasm for science and technology to the future generation of young scientists.

Your company logo will be displayed on our iGEM Wiki page and guides the viewer directly to the company's website. The Wiki is part of the iGEM open source community and can be consulted by thousands of people. Your logo can also be placed on the T-shirts, brochures, flyers, KU Leuven website, posters, and on our final presentation in Boston.

If you choose to support us based on one of the formulas below, we could offer you even more. The extras you can expect from us are listed in the table. If you have suggestions or want to have a customized formula, do not hesitate to contact us on [sponsor.igem@chem.kuleuven.be](mailto:sponsor.igem@chem.kuleuven.be).

We will also keep you up-to-date about the recent news on our project. The progress of the team will be weekly updated on our Wiki page. We will also invite sponsors to the public events which we will organize.

Also, note that any support above €40 can receive a fiscal certificate from the KU Leuven and your sponsorship/donation becomes tax-deductible.

### **How to become a sponsor?**

Should you decide to sponsor us, please contact us on [sponsor.igem@chem.kuleuven.be](mailto:sponsor.igem@chem.kuleuven.be).



## 8. Sponsor packages

Sponsor-formula	Extra bonus
 <p><b>Platinum Level</b></p> <p>€2,500.00</p>	<ul style="list-style-type: none"> <li>• Large logo on the iGEM 2015 KU Leuven team T-shirt</li> <li>• Large logo in the promotion video of the iGEM 2015 team</li> <li>• Large logo on the poster in Boston</li> <li>• Logo on the Wiki with a link to the website of your company</li> <li>• Acknowledgement on the Wiki/iGEM website (KU Leuven)</li> <li>• Acknowledgement on the presentation in Boston</li> </ul>
 <p><b>Gold Level</b></p> <p>€2,000.00</p>	<ul style="list-style-type: none"> <li>• Logo on the iGEM 2015 KU Leuven team T-shirt</li> <li>• Logo in the promotion video of the iGEM 2015 team</li> <li>• Small logo on the poster in Boston</li> <li>• Logo on the Wiki with a link to the website of your company</li> <li>• Acknowledgement on the Wiki/iGEM website (KU Leuven)</li> <li>• Acknowledgement on the presentation in Boston</li> </ul>
 <p><b>Silver Level</b></p> <p>€1,500.00</p>	<ul style="list-style-type: none"> <li>• Logo on the iGEM 2015 KU Leuven team T-shirt</li> <li>• Small logo in the promotion video of the iGEM 2015 team</li> <li>• Small logo on the poster in Boston</li> <li>• Logo on the Wiki with a link to the website of your company</li> <li>• Acknowledgement on the Wiki/iGEM website (KU Leuven)</li> <li>• Acknowledgement on the presentation in Boston</li> </ul>





**€1,000.00**

- Small logo on the iGEM 2015 KU Leuven team T-shirt
- Small logo in the promotion video of the iGEM 2015 team
- Small logo on the Wiki with a link to the website of your company
- Acknowledgement on the Wiki/iGEM website (KU Leuven)
- Acknowledgement on the presentation in Boston

**Jamboree**

**€500.00**

- Small logo on the Wiki with a link to the website of your company
- Acknowledgement on the Wiki/iGEM website (KU Leuven)
- Acknowledgement on the presentation in Boston

**iGEM KU Leuven  
sympathiser**

**€300.00**

- Acknowledgement on the Wiki/iGEM website (KU Leuven)
- Acknowledgement on the presentation in Boston

**Private donation  
(Negotiable)**

- Acknowledgement on the Wiki



## 9. Media

Already from the early stage of the project, we are present in the media. Among others, the BIOVOX journal published articles about us.

# BIOVOX

### KULEUVEN IGEN 2015 OPENING EVENT

📍 KULeuven, Arenberg III Campus, Computer Science Aula, Celestijnenlaan 200A, Heverlee  
 📅 Wed 20 May 2015  
 ⌚ 19:00

This year, after four successful participations, KU Leuven decided to once again join the iGEM - the most prestigious students' synthetic biology competition. Using advanced computational simulations predicting the behavioral movements of living cells. The KU Leuven iGEM 2015 Team would like to

### PATTERN-CREATING BACTERIA DESIGNED BY KULEUVEN STUDENTS

Written by GK on Monday 1 June 2015 in the category [insights](#) with the tags [bio-industry](#), [networking](#), [academia](#).



After successfully competing in four previous editions, KU Leuven once again joins the [iGEM](#) (international Genetically Engineered Machine) – the most prestigious international students' synthetic biology competition. The iGEM competition brings together interdisciplinary undergraduate student teams from all over the world in an effort to create micro-organisms that can perform novel tasks. One of those teams will represent KU Leuven.

The processes behind zebra stripe formation and embryo development

Pattern formation in nature has always been considered as mysterious as it is beautiful. Animal markings, segmentation of animals, the arrangement of leaves on plants, and neuronal activation patterns, are all examples of patterns found in nature. Pattern formation also illustrates how cells in a developing embryo, which were initially equivalent, can assume complex forms and

